

Appl. No. 10/089,598
Amdt. Dated May 18, 2004
Reply to Office Action of February 18, 2004

Attorney Docket No. 81833.0036
Customer No.: 26021

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-5. (Canceled)

6. (Original) An aligning and supplying apparatus for mounting a conveyed article having different thickness and width and capable of being stably mounted by setting a thickness direction or a width direction to a vertical direction, respectively, comprising:

a turn table in which a step portion having a predetermined height is provided along a peripheral edge of a mounting surface;

a width guide crossing to said step portion in such a manner as to guide said conveyed article mounted on said mounting surface from a center side to an outer peripheral side due to a rotation of said turn table, having one end positioned at the center side of said turn table rather than said step portion and having another end protruding outward from the outer periphery of said step portion so as to be fixed; and

a thickness gate arranged in an upper side of said conveyed article passing within said width guide on said turn table, and having a projection portion protruding toward said conveyed article so as to be capable of getting down said conveyed article in a high attitude on said step portion without getting down said conveyed article in a low attitude at a time when said conveyed article moving along said width guide due to the rotation of said turn table rides over said step portion.

7. (Currently amended) A conveying apparatus comprising:
 - a rotary disc portion having a pair of parallel plate members with a region defined there between;
 - a gap formed on the region between the pair of parallel plate members;
 - a first suctioning device disposed to secure an article on the outer peripheral surfaces of the pair of parallel plate members by extracting air from the gap;
 - a linear conveying portion having a pair of parallel conveying belts with a gap formed there between, the linear conveying portion being in communication with the rotary disc portion to transfer the article from the rotary disc portion to the linear conveying portion; and
 - supporting members positioned in the pair of parallel plate members to hold the article in place such that the article transfers to the linear conveying portion, wherein the supporting members have a large coefficient of friction.
8. (Canceled)
9. (Previously presented) The conveying apparatus according to claim 7, wherein the pair of parallel plate members includes grooves provided around the peripheral surface of each of the parallel plate members.
10. (Previously presented) The conveying apparatus according to claim 7, wherein the supporting members are made of rubber.
11. (Previously presented) The conveying apparatus according to claim 7, further comprising a second suctioning device provided between the pair of parallel conveying belts.

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12. (Previously presented) The conveying apparatus according to claim 7, further comprising a side surface inspection portion for inspecting a side surface of the article.

13. (Previously presented) The conveying apparatus according to claim 7, wherein the linear conveying portion includes a first conveying portion and a second conveying portion, one end of the first conveying portion in communication with the outer peripheral surfaces of the pair of parallel plate members so as to transfers the article, and one end of the second conveying portion in communication with the other end of the first conveying portion so as to further transfer the article.

14. (Previously presented) The conveying apparatus according to claim 13 further comprising a means for aligning and supplying the article to the outer peripheral surfaces of the pair of parallel plate members,

the means for aligning and supplying being positioned opposite the first conveying portion,

wherein the rotary disc portion is disposed between the means for aligning and supplying and the first conveying portion.

15. (Previously presented) The conveying apparatus according to claim 14, wherein the means for aligning and supplying includes a turntable and a width guide.

16. (Previously presented) A conveying apparatus comprising:
 - a rotary disc portion having a pair of parallel plate members with a region defined there between;
 - a gap formed on the region between the pair of parallel plate members;
 - a first suctioning device disposed to secure an article on the outer peripheral surfaces of the pair of parallel plate members by extracting air from the gap;
 - a linear conveying portion having a pair of parallel conveying belts with a gap formed there between, the linear conveying portion being in communication with the rotary disc portion to transfer the article from the rotary disc portion to the linear conveying portion; and
 - an air shutting device positioned between the pair of parallel plate members and forming the slit, the air shutting device having a solid portion for preventing air suctioning.
17. (Previously presented) The conveying apparatus according to claim 13 further comprising:
 - a front surface inspection portion for inspecting a front surface of the article conveyed on the first conveying portion;
 - a back surface inspection portion for inspecting a back surface of the article conveyed on the second conveying portion; and
 - a sorting portion for sorting the article.
18. (Previously presented) The conveying apparatus according to claim 17, wherein the article is sorted in response to results obtained from the front surface inspection portion, the back surface inspection portion or the side surface inspection portion.

19. (Canceled)
20. (Currently amended) A method for conveying an article comprising:
 - providing an article on a rotary disc portion having a pair of parallel plate members with a region defined there between, with a gap formed on one side of the region between the pair of parallel plate members;
 - securing the article on outer peripheral surfaces of the pair of parallel plate members by extracting air from the gap;
 - guiding the article onto a linear conveying portion having a pair of parallel conveying belts with a gap formed there between, the linear conveying portion being in communication with the rotary disc portion to transfer the article from the rotary disc portion to the linear conveying portion;
 - providing supporting members positioned in the pair of parallel plate members to hold the article in place such that the article transfers to the linear conveying portion, wherein the supporting members have a large coefficient of friction; and
 - providing grooves provided around the peripheral surface of each of the parallel plate members.
21. (Previously presented) The method for conveying according to claim 20 further comprising positioning supporting members in the grooves of the pair of parallel plate members to hold the article in place such that the article transfers to the linear conveying portion.
22. (Previously presented) The method for conveying according to claim 20, further comprising inspecting a side surface of the article.
23. (Previously presented) The method for conveying according to claim 20,

further comprising aligning and supplying the article to the outer peripheral surfaces of the pair of parallel plate members.

24. (Previously presented) The method for conveying according to claim 20, further comprising:

inspecting a front surface of the article conveyed;
inspecting a back surface of the article conveyed; and
sorting the article.

25. (Previously presented) The aligning and supplying apparatus according to claim 6 further comprising a conveying apparatus comprising:

a rotary disc portion having a pair of parallel plate members with a region defined there between.

26. (Previously presented) The aligning and supplying apparatus according to claim 25 further comprising a gap formed on the region between the pair of parallel plate members.

27. (Previously presented) The aligning and supplying apparatus according to claim 26 further comprising a first suctioning device disposed to secure the article on the outer peripheral surfaces of the pair of parallel plate members by extracting air from the gap.

28. (Previously presented) The aligning and supplying apparatus according to claim 27 further comprising a linear conveying portion having a pair of parallel conveying belts with a gap formed there between, the linear conveying portion being in communication with the rotary disc portion to transfer the article from the rotary disc portion to the linear conveying portion.

29. (Previously presented) The aligning and supplying apparatus according to claim 28 further comprising supporting members positioned in the pair of parallel plate members to hold the article in place such that the article transfers to the linear conveying portion.
30. (Previously presented) The aligning and supplying apparatus according to claim 28 further comprising a second suctioning device provided between the pair of parallel conveying belts.
31. (Previously presented) The aligning and supplying apparatus according to claim 28 further comprising a side surface inspection portion for inspecting a side surface of the article.
32. (Previously presented) The aligning and supplying apparatus according to claim 28, wherein the linear conveying portion includes a first conveying portion and a second conveying portion, one end of the first conveying portion in communication with the outer peripheral surfaces of the pair of parallel plate members so as to transfers the article, and one end of the second conveying portion in communication with the other end of the first conveying portion so as to further transfer the article.
33. (Previously presented) The aligning and supplying apparatus according to claim 29, wherein the supporting members have a large coefficient of friction.
34. (Previously presented) The aligning and supplying apparatus according to claim 29, wherein the pair of parallel plate members includes grooves provided around the peripheral surface of each of the parallel plate members.

35. (Previously presented) The aligning and supplying apparatus according to claim 29, wherein the supporting members are made of rubber.

36. (Currently amended) A method for conveying an article comprising:
providing an article on a rotary disc portion having a pair of parallel plate members with a region defined there between, with a gap formed on one side of the region between the pair of parallel plate members;

securing the article on outer peripheral surfaces of the pair of parallel plate members by extracting air from the gap;

guiding the article onto a linear conveying portion having a pair of parallel conveying belts with a gap formed there between, the linear conveying portion being in communication with the rotary disc portion to transfer the article from the rotary disc portion to the linear conveying portion; and

positioning supporting members of the pair of parallel plate members to hold the article in place such that the article transfers to the linear conveying portion, wherein the supporting members have a large coefficient of friction.

37. (Previously presented) The method according to claim 36, wherein the supporting members are made of rubber.

38. (Canceled)

39. (Currently amended) The A method according to claim 36 for conveying an article comprising:

providing an article on a rotary disc portion having a pair of parallel plate members with a region defined there between, with a gap formed on one side of the region between the pair of parallel plate members;

securing the article on outer peripheral surfaces of the pair of parallel plate

members by extracting air from the gap;

guiding the article onto a linear conveying portion having a pair of parallel conveying belts with a gap formed there between, the linear conveying portion being in communication with the rotary disc portion to transfer the article from the rotary disc portion to the linear conveying portion; and

positioning supporting members of the pair of parallel plate members to hold the article in place such that the article transfers to the linear conveying portion, wherein the supporting members have a buffering property.

40. (Currently amended) The A method according to claim 36 for conveying an article comprising:

providing an article on a rotary disc portion having a pair of parallel plate members with a region defined there between, with a gap formed on one side of the region between the pair of parallel plate members;

securing the article on outer peripheral surfaces of the pair of parallel plate members by extracting air from the gap;

guiding the article onto a linear conveying portion having a pair of parallel conveying belts with a gap formed there between, the linear conveying portion being in communication with the rotary disc portion to transfer the article from the rotary disc portion to the linear conveying portion; and

positioning supporting members of the pair of parallel plate members to hold the article in place such that the article transfers to the linear conveying portion, wherein the supporting members have an adhesive property.

41. (Previously presented) The method according to claim 36, wherein the supporting members have a buffering property and an adhesive property.

42. (Previously presented) The method according to claim 36, wherein the supporting members include an O-ring.

43. (Previously presented) The conveying apparatus according to claim 7, wherein the supporting members have a buffering property.

44. (Currently amended) ~~The A conveying apparatus according to claim 7 comprising:~~

a rotary disc portion having a pair of parallel plate members with a region defined there between;

a gap formed on the region between the pair of parallel plate members;

a first suctioning device disposed to secure an article on the outer peripheral surfaces of the pair of parallel plate members by extracting air from the gap;

a linear conveying portion having a pair of parallel conveying belts with a gap formed there between, the linear conveying portion being in communication with the rotary disc portion to transfer the article from the rotary disc portion to the linear conveying portion; and

supporting members positioned in the pair of parallel plate members to hold the article in place such that the article transfers to the linear conveying portion, wherein the supporting members have an adhesive property.

45. (Currently amended) ~~The A conveying apparatus according to claim 7 comprising:~~

a rotary disc portion having a pair of parallel plate members with a region defined there between;

a gap formed on the region between the pair of parallel plate members;

a first suctioning device disposed to secure an article on the outer peripheral

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surfaces of the pair of parallel plate members by extracting air from the gap;
a linear conveying portion having a pair of parallel conveying belts with a gap
formed there between, the linear conveying portion being in communication with
the rotary disc portion to transfer the article from the rotary disc portion to the
linear conveying portion; and

supporting members positioned in the pair of parallel plate members to hold
the article in place such that the article transfers to the linear conveying portion,
wherein the supporting members have a buffering property and an adhesive
property.

46. (Previously Presented) The conveying apparatus according to claim 7,
wherein the supporting members include an O-ring.